

FORM PTO-1390 (Modified) (REV 11-2000)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER KSN0026	
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371				U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR <div style="font-size: 1.5em; font-weight: bold; text-align: center;">10/049947</div>	
INTERNATIONAL APPLICATION NO PCT/IB00/01377		INTERNATIONAL FILING DATE 21 August 2000		PRIORITY DATE CLAIMED 20 August 1999	
TITLE OF INVENTION COMPONENT FOR ASSEMBLY ON A PRINTED CIRCUIT BOARD					
APPLICANT(S) FOR DO/EO/US Johan Vanbesien					
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:					
<ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. 2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. 3. <input type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below. 4. <input checked="" type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (Article 31). 5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371 (c) (2)) <ol style="list-style-type: none"> a. <input type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau). b. <input checked="" type="checkbox"/> has been communicated by the International Bureau. c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). 6. <input checked="" type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)). <ol style="list-style-type: none"> a. <input checked="" type="checkbox"/> is attached hereto. b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4). 7. <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3)) <ol style="list-style-type: none"> a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau). b. <input type="checkbox"/> have been communicated by the International Bureau. c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. d. <input type="checkbox"/> have not been made and will not be made. 8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)). 9. <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)). 10. <input checked="" type="checkbox"/> An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)). 11. <input checked="" type="checkbox"/> A copy of the International Preliminary Examination Report (PCT/IPEA/409). 12. <input checked="" type="checkbox"/> A copy of the International Search Report (PCT/ISA/210). <p>Items 13 to 20 below concern document(s) or information included:</p> <ol style="list-style-type: none"> 13. <input type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. 14. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. 15. <input checked="" type="checkbox"/> A FIRST preliminary amendment. 16. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment. 17. <input type="checkbox"/> A substitute specification. 18. <input type="checkbox"/> A change of power of attorney and/or address letter. 19. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825. 20. <input type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4). 21. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4). 22. <input checked="" type="checkbox"/> Certificate of Mailing by Express Mail 23. <input checked="" type="checkbox"/> Other items or information: <p style="margin-left: 40px;">Check No. 100436</p>					

1610 Rec'd PCT/PTO 19 FEB 2002

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 30/049947		INTERNATIONAL APPLICATION NO PCT/IB00/01377		ATTORNEY'S DOCKET NUMBER KSN0026													
24. The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) : <div style="margin-left: 20px;"><input type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$1040.00 <input checked="" type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$890.00 <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$740.00 <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$710.00 <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) \$100.00</div> <div style="text-align: right; margin-right: 50px;">ENTER APPROPRIATE BASIC FEE AMOUNT =</div>				CALCULATIONS PTO USE ONLY													
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).				\$890.00													
<table border="1" style="width:100%; border-collapse: collapse;"><thead><tr><th style="width:15%;">CLAIMS</th><th style="width:25%;">NUMBER FILED</th><th style="width:25%;">NUMBER EXTRA</th><th style="width:35%;">RATE</th></tr></thead><tbody><tr><td>Total claims</td><td>20 - 20 =</td><td>0</td><td>x \$18.00</td></tr><tr><td>Independent claims</td><td>2 - 3 =</td><td>0</td><td>x \$84.00</td></tr></tbody></table>				CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	Total claims	20 - 20 =	0	x \$18.00	Independent claims	2 - 3 =	0	x \$84.00	\$0.00	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE														
Total claims	20 - 20 =	0	x \$18.00														
Independent claims	2 - 3 =	0	x \$84.00														
Multiple Dependent Claims (check if applicable). <input type="checkbox"/>				\$0.00													
TOTAL OF ABOVE CALCULATIONS =				\$890.00													
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27). The fees indicated above are reduced by 1/2.				\$0.00													
SUBTOTAL =				\$890.00													
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).				\$0.00													
TOTAL NATIONAL FEE =				\$890.00													
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). <input type="checkbox"/>				\$0.00													
TOTAL FEES ENCLOSED =				\$890.00													
				Amount to be: refunded	\$												
				charged	\$												
<div style="margin-left: 20px;"><p>a. <input checked="" type="checkbox"/> A check in the amount of \$890.00 to cover the above fees is enclosed.</p><p>b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees. A duplicate copy of this sheet is enclosed.</p><p>c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 02-0387 A duplicate copy of this sheet is enclosed.</p><p>d. <input type="checkbox"/> Fees are to be charged to a credit card. WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.</p></div>																	
<p>NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.</p> <p>SEND ALL CORRESPONDENCE TO:</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"><p>Eric J. Groen Baker & Daniels 205 West Jefferson Blvd. Suite 250 South Bend, IN 46601</p><p>Telephone: 574-234-4149 Fax: 574-239-1900</p></div>																	
				<div style="text-align: center;"> _____ SIGNATURE</div> <div style="text-align: center;">Eric J. Groen _____ NAME</div> <div style="text-align: center;">32,230 _____ REGISTRATION NUMBER</div> <div style="text-align: center;">February 19, 2002 _____ DATE</div>													

10/049947
IC10 Rec'd PCT/PTO 9 FEB 2002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Johan Vanbesien
Filed: PCT/IB00/01377 (August 21, 2000)
Serial No.:
Title: COMPONENT FOR ASSEMBLY ON A PRINTED
CIRCUIT BOARD
Group/Art Unit:
Examiner:
Docket No.: KSN0026

Honorable Commissioner for Patents
Washington, D.C. 20231

Sir:

PRELIMINARY AMENDMENT

In the above-mentioned PCT application, please accept the enclosed application under the national stage pursuant to 35 USC § 371 and amend the application as follows:

In the Claims:

Please replace claims 1-6 of the application with claims 1-20 as follows:

1. An electrical connector for mounting on a printed circuit board, comprising a multiplicity of electrical terminal members to be connected to said circuit board and being in the form of a matrix including a plurality of rows and columns each, wherein several terminal member groups, each comprising several terminal members in the form of SMT contacts to be soldered to the circuit board, are fixed in a predetermined relative position independently of each other by plastic bodies of their own that are injection-molded thereto, several plastic bodies along with the terminal member groups extending through the same are adapted to be fixed in predetermined relative positions, and the plastic bodies fixed in a predetermined relative position, along with the terminal member groups extending through the same, are movable perpendicularly to the circuit board surface independently of each other.

2. A connector according to claim 1, wherein the plastics body along with the terminal members extending through the same is movable relative to specific or all remaining constituent parts of the connector.

3. A connector according to claim 1, wherein the terminal members of the terminal member groups each are such terminal members that are manufactured in common.

4. A connector according to claim 1, wherein the terminal members of the terminal member groups each are such terminal members that can be connected to the circuit board at mutually adjacent locations.

5. A connector according to claim 1, wherein the several plastics bodies along with the terminal member groups extending through the same are movable relative to each other.

6. A connector according to claim 1, wherein the terminal members extending through the respective plastics bodies are the sole constituent parts each of the connector to which the plastics bodies are connected.

7. A connector according to claim 5, wherein the plastic bodies include alignment members molded within the plastic body.

8. A connector according to claim 7, wherein the connector includes an outer housing having a plurality of spaced apart walls arranged in columns, said plastic bodies and said spaced apart walls having cooperating alignment members.

9. A connector according to claim 8, wherein said alignment members comprise cooperating grooves and ribs.

10. A connector according to claim 9, wherein said cooperating grooves and ribs are vertically extending.

11. An electrical connector for mounting on a printed circuit board, comprising a plurality of electrical terminal members profiled for connection to the circuit board and being in the form of a matrix including a plurality of rows and columns, wherein several terminal member groups, each comprising several terminal members in the form of contacts to be soldered to the circuit board, are fixed in a predetermined relative position independently of each other by molded plastic bodies, several molded plastic bodies along with the terminal member groups extending through the same are adapted to be fixed in predetermined relative positions, and the molded plastic bodies, along with the terminal member groups extending

through the same, are movable perpendicularly to the circuit board surface independently of each other.

12. A connector according to claim 7, wherein the plastic body along with the terminal members extending through the same is movable relative to specific or all remaining constituent parts of the connector.

13. A connector according to claim 7, wherein the terminal members of the terminal member groups each are such terminal members that are manufactured in common.

14. A connector according to claim 7, wherein the terminal members of the terminal member groups each are such terminal members that can be connected to the circuit board at mutually adjacent locations.

15. A connector according to claim 7, wherein the several plastics bodies along with the terminal member groups extending through the same are movable relative to each other.

16. A connector according to claim 7, wherein the terminal members extending through the respective plastic bodies are the sole constituent parts each of the connector to which the plastics bodies are connected.

17. A connector according to claim 14, wherein the plastic bodies include alignment members molded within the plastic body.

18. A connector according to claim 16, wherein the connector includes an outer housing having a plurality of spaced apart walls arranged in columns, said plastic bodies and said spaced apart walls having cooperating alignment members.

19. A connector according to claim 16, wherein said alignment members comprise cooperating grooves and ribs.

20. A connector according to claim 19, wherein said cooperating grooves and ribs are vertically extending.

REMARKS

Applicant respectfully requests that the above preliminary amendment be entered, and that the fees due herewith are calculated using the new claims, not the claims of the PCT application.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Eric J. Groen", written over a horizontal line.

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3/PATS

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(PCT/IB00/01377)

5 **Description**

Component for Mounting on a Printed Circuit Board

10 The present invention relates to a device according to the generic clause of claim 1, i.e. to a component for mounting on a printed circuit board, comprising a multiplicity of electrical terminal members for connection to the circuit board.

15 Such a component is, for example, the electrical connector shown in Fig. 5. The electrical connector shown consists in essence of contact elements, not shown in Fig. 5, for connecting the electrical connector to another electrical connector, a housing 1 enclosing the contact
20 elements, electrical terminal members 2 extending out of housing 1 for soldering the electrical connector to a printed circuit board LP, and an alignment plate 3.

25 By means of the alignment plate 3, the electrical terminal members 2 of the electrical connector are held in a predetermined relative position. As regards further details of alignment plate 3, reference is made to document DE 197 54 877 A1.

30 Holding of the electrical terminal members in a predetermined relative position is of advantage in particular when the electrical connector is a component for surface mounting, i.e. when the electrical terminal members are so-called SMT contacts.

SMT contacts are designed to be soldered to surface contacts of the printed circuit board. In this regard, soldering paste is applied first to the surface contacts of the circuit board, thereafter the component to be soldered to the circuit board is arranged on the circuit board, and finally the soldering operation proper takes place by heating the locations concerned.

For performing proper soldering, the locations of the electrical terminal members of the electrical connector to be soldered to the surface contacts of the circuit board must be in contact with the soldering paste during heating; otherwise, a solder connection obviously cannot be established between the surface contacts of the circuit board and the electrical terminal members of the electrical connector.

For this reason, the locations to be soldered of the electrical terminal members of a component have to be located approximately in one plane. Possibly existing deviations from a coplanar arrangement of these locations are tolerable to a very limited extent only.

This is a serious problem in particular with components having a very large number of electrical terminal members.

For eliminating this problem, the electrical terminal members of surface-mountable components are not seldom fixed in their proper relative position by the aforementioned alignment plate 3. The effect achievable thereby is that the locations to be soldered of all electrical terminal members are located in one plane.

That the electrical terminal members of a component assume an exactly prescribed relative position may also be necessary for components that are not designed for sur-

face mounting. In this case, too, the use of an alignment plate or the like may turn out to be advantageous.

75

However, the manufacture and in particular the mounting of such alignment plates involve a not inconsiderable expenditure.

80 It is thus the object of the present invention to develop the component according to the generic clause of claim 1 in such a manner that the electrical terminal members thereof can be reliably and permanently fixed in an exact, predetermined relative position with minimum
85 expenditure.

According to the invention, this object is met by the feature claimed in the characterizing part of claim 1.

90 According to the latter, it is provided that a plurality of electrical terminal members is fixed in a predetermined relative position by a plastics body that is injection-molded to said terminal members.

95 Fixing of the terminal members in a predetermined relative position by injection-molding of a plastics body to the previously aligned terminal members can be effected in considerably simpler manner than the manufacture and mounting of an alignment plate or the like. Furthermore,
100 terminal members fixed by a molded-on plastics body are fixed in considerably exacter and safer manner than in case of utilization of alignment plates or the like.

With a component designed as claimed, the electrical
105 terminal members can be reliably and permanently fixed in an exact, predetermined relative position with minimum expenditure.

Advantageous developments of the invention are set forth
110 in the dependent claims, the following description and
the figures.

The invention will be elucidated hereinafter in more de-
tail with reference to the drawings wherein

115 Fig. 1 shows a side view of an electrical connector de-
scribed in more detail hereinafter;

120 Fig. 2 shows a front view of the electrical connector
shown in Fig. 1;

Fig. 3 shows a sectional side view of the electrical
connector shown in the preceding figures (sec-
tion along the line III-III in Fig. 2),

125 Fig. 4 shows a bottom view of the electrical connector
shown in the preceding figures, and

Fig. 5 shows a conventional electrical connector.

130 The component with respect to which the invention will
be described in more detail hereinafter is an electrical
connector. However, it is to be pointed out already here
that the special features of the electrical connector
135 described in more detail hereinafter can be applied to
other components as well.

The electrical connector illustrated in more detail
herein comprises a multiplicity of electrical terminal
140 members to be soldered to the printed circuit board. The
special features of the electrical connector de-
scribed in more detail hereinafter, however, may also be
employed with other components connected to the circuit
board other than by soldering.

145

The electrical terminal members to be soldered to the circuit board, in the embodiment illustrated, are SMT contacts designed for surface-mounting of the component on the circuit board. However, the electrical terminal members to be soldered to the circuit board may also be terminal members designed for soldering (reflow soldering, wave soldering etc.) in plated-through holes of the circuit board.

It would be conceivable just as well that the electrical terminal members of the components to be soldered to the circuit board are terminal members designed for soldering thereof on the opposite side of the circuit board.

It is to be pointed out already here that the provision of the special features described hereinafter has very advantageous effects with components in which the electrical terminal members are constituted by SMT contacts; however, positive effects can be achieved also with components the electrical terminal members of which are designed for soldering in accordance with a different method.

The electrical connector illustrated in more detail here in so far corresponds to the electrical connector described initially with reference to Fig. 5.

The connector illustrated in more detail here distinguishes itself in particular in that a plurality of electrical terminal members are fixed in a predetermined relative position by a plastics body that is injection-molded thereto.

This will be described in more detail hereinafter with reference to Figs. 1 to 4.

The already mentioned electrical terminal members of the electrical connector concerned bear the reference numeral 12. In the embodiment illustrated, there is provided a total of 25 electrical terminal members. These are designed and arranged such that they can be soldered to a surface contact matrix comprising 5 rows and 5 columns. It should be obvious that both the number and the arrangement of the electrical terminal members and of the associated surface contacts may be different in arbitrary manner.

In addition thereto, the electrical connector contains a housing 11 which, however, in contrast to the housing 1 of the electrical connector according to Fig. 5 does not only accommodate the contact elements necessary for establishing contact with another electrical connector, but also the majority of the electrical terminal members that are exposed in the electrical connector according to Fig. 5; as regards the electrical terminal members 12, it is in essence just the locations provided for soldering to the circuit board that project from the housing.

As can be seen in particular from Fig. 3, the housing 11 in the embodiment illustrated consists of two parts, namely a bottom part 111 and a top part 112.

The bottom part 111 and/or the top part 112 of housing 11 or other constituent parts of the electrical connector may be mechanically connected to printed circuit board LP at one or more anchoring points 15. At these anchoring points, the housing parts, for example, can be soldered to the circuit board, with this soldering in case of surface-mounted components, such as the electrical connector illustrated, preferably taking place in accordance with an SMT process as well. Such or other

anchoring of the electrical connector on the circuit board provides the same with a firm hold; moreover, in case of mechanical loads, it cannot be detached from the circuit board as easily as without such anchoring. The anchoring elements may also facilitate that the electrical connector assumes its proper position when the same is mounted on the circuit board.

For exact positioning of the electrical connector on the printed circuit board, the embodiment illustrated moreover provides for one or more positioning pins 16 to be inserted into associated openings in the circuit board.

Fig. 3 also illustrates the contact elements of the electrical connector provided for connecting the same to another electrical connector; these are designated 13 in Fig. 3. The contact elements 13 are arranged behind insertion openings 113 provided in housing 11; through these insertion openings, the contact elements of the electrical connector to be contacted with the illustrated electrical connector, may be contacted with contact elements 13. As can be seen in particular from Fig. 2, a total of 25 insertion openings 113 is provided in the embodiment illustrated; these are arranged in a matrix of 5 rows and 5 columns. The insertion opening rows extend in horizontal direction and are constituted by insertion openings arranged laterally beside each other; these are designated ER1 to ER5 in the figures. The insertion opening columns extend in vertical direction and are constituted by insertion openings arranged one above the other; these are designated ES1 to ES5 in the figures.

The contact elements 13 arranged behind the insertion openings 113 are connected to the electrical terminal members 12 or merge with the same. The electrical termi-

nal members, or to be more precise, the locations
255 thereof to be soldered to the circuit board are arranged
in a matrix of 5 rows and 5 columns as well. This can be
seen in particular from Fig. 4. The terminal member rows
are designated AR1 to AR5, and the terminal member col-
umns are designated AS1 to AS5. In this regard, the con-
260 tact elements and terminal members provided at mutually
corresponding locations within the matrices are con-
nected to each other. I.e., a contact element provided
behind the m^{th} insertion opening column and the n^{th} in-
sertion opening row is connected to the terminal member
265 provided in the m^{th} terminal member column and the n^{th}
terminal member row.

As was already pointed out hereinbefore, provisions have
to be taken with SMT components, such as the electrical
270 connector illustrated, that the locations of the elec-
trical terminal members to be soldered to the circuit
board are coplanar.

In the embodiment illustrated, this is achieved in that
275 the electrical terminal members brought into a corre-
sponding relative position have plastics material injec-
tion-molded therearound. Due to this, a common plastics
body is formed around the terminal members, through
which the terminal members extending through the same
280 are fixed in their relative position taken at the time
of the injection molding operation. For the sake of com-
pleteness, it is to be pointed out that the locations of
the terminal members to be soldered to the circuit
board, of course, are not subject to injection-molding;
285 the plastics body injection-molded around the terminal
members is arranged and dimensioned such that it does
not interfere with the mounting of the electrical compo-
nent on the circuit board.

290 Depending on the particular requirements, either all or
only specific terminal members may have material injection-molded therearound as described. The terminal members to be subjected to such injection molding may be fixed by a plastics body common to all terminal members
295 or by several individual plastics bodies.

In the embodiment illustrated, the latter possibility is employed. In doing so, the terminal members are subjected to such injection molding in the forms of columns
300 each. This turns out to be particularly advantageous since the terminal members of a terminal member column may be manufactured in common as well: the terminal members arranged in a column each (preferably together with the associated contact elements) may be commonly stamped and formed from one single sheet metal member. The injection molding operation of the commonly manufactured (in the same sequence of operations) turns out to be particularly simple since these may thus be processed further directly after their manufacture.

310 The terminal members of the electrical connector illustrated are thus fixed in columns by plastics bodies of their own each. These plastics bodies are lamella-like structures designated K1 to K5 in the figures.

315 Due to the fact that at all times "only" those terminal members are connected via a common plastics body that are manufactured in the same sequence of operations each, and due to the fact that injection molding of plastics material around the terminal members may take
320 place immediately after manufacture thereof, the terminal members can be fixed in their relative position in which they were stamped out. If the terminal members are stamped out such that they take the desired relative position after stamping, the terminal members can be fixed
325 in the desired relative position by the subsequent mold-

ing of plastics material therearound, without a preceding adjustment.

330 If the terminal members, as in the embodiment illustrated, are fixed in their desired relative positions independently of each other by several separate plastics bodies, it turns out to be expedient if the plastics bodies, preferably at a central location thereof, are
335 provided with structures by means of which the several plastics bodies and thus all terminal members of the electrical connector may be brought into a predetermined relative position.

340 In the embodiment illustrated, the structures mentioned are formed by vertically extending grooves 14 in plastics bodies K1 to K5. The grooves may receive, by arrangement of the top part 112 of housing 11 thereon, elements provided on the latter, such as e.g. vertically
345 extending intermediate walls, webs, pegs, pins and the like. The plastics bodies thus can be aligned in lateral direction relative to each other.

In particular with very large electrical connectors
350 (having many columns) or other components, it may turn out expedient if the alignment of the plastics bodies as described or in a different manner does not restrict the movability thereof in the direction perpendicular to the circuit board surface. The plastics bodies along with
355 the terminal members extending through the same may then - driven by their own weight - move downwardly to different extents independently of each other and may thus compensate irregularities present in the circuit board.

360 With a component that is designed as described, it is possible irrespective of the details of the practical realization to reliably and permanently fix the electri-

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cal terminal members in an exact, predetermined relative position with minimum expenditure.

characterized in that the terminal members (12) of the terminal member groups each are such terminal members that are manufactured in common.

40

4. A connector according to any of claims 1 to 3, characterized in that the terminal members (12) of the terminal member groups each are such terminal members that can be connected to the circuit board (LP) at mutually adjacent locations.

45

5. A connector according to any of claims 1 to 4, characterized in that the several plastics bodies (K1 to K5) along with the terminal member groups extending through the same are movable relative to each other.

50

6. A connector according to any of the preceding claims;

- characterized in that the terminal members (12) extending through the respective plastics bodies (K1 to K5) are the sole constituent parts each of the connector to which the plastics bodies are connected.

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JC10 Rec'd PCT/PIU 19 FEB 2006

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"ANNEXES" of IPER

(PCT/IB00/1377)

5 Translation of Amended Claims

Claims

- 10 1. An electrical connector for mounting on a printed circuit board (LP), comprising a multiplicity of electrical terminal members (12) to be connected to said circuit board and being in the form of a matrix including a plurality of rows and columns each, characterized in that several terminal member
- 15 groups, each comprising several terminal members (12) in the form of SMT contacts to be soldered to the circuit board, are fixed in a predetermined relative position independently of each other by plastics bodies (K1 to K5) of their own that are in-
- 20 jection-molded thereto, that several plastics bodies (K1 to K5) along with the terminal member groups extending through the same are adapted to be fixed in predetermined relative positions, and in that plas-
- 25 tics bodies fixed in a predetermined relative position, along with the terminal member groups extending through the same, are movable perpendicularly to the circuit board surface independently of each other.
- 30 2. A connector according to claim 1, characterized in that the plastics body (K1 to K5) along with the terminal members (12) extending through the same is movable relative to specific or all remaining constituent parts of the connector.
- 35 3. A connector according to claim 1 or 2,

Abstract

435 Described is a component for mounting on a circuit
board, comprising a multiplicity of electrical terminal
members for connection to said circuit board. The compo-
nent is characterized in that several electrical termi-
440 nal members are fixed in a predetermined relative posi-
tion by a plastics body that is injection-molded
thereto. The electrical terminal members can thus be
permanently and reliably fixed in an exact, predeter-
mined relative position with minimum expenditure.

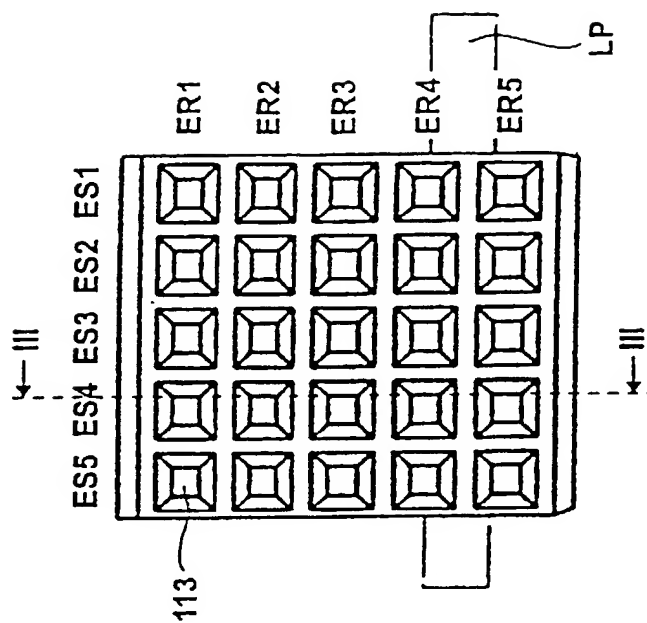


FIG 2

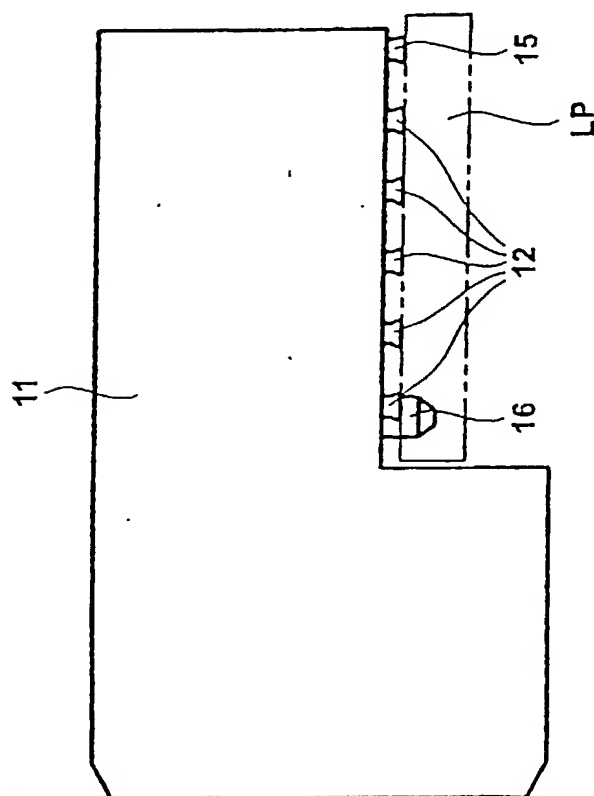


FIG 1

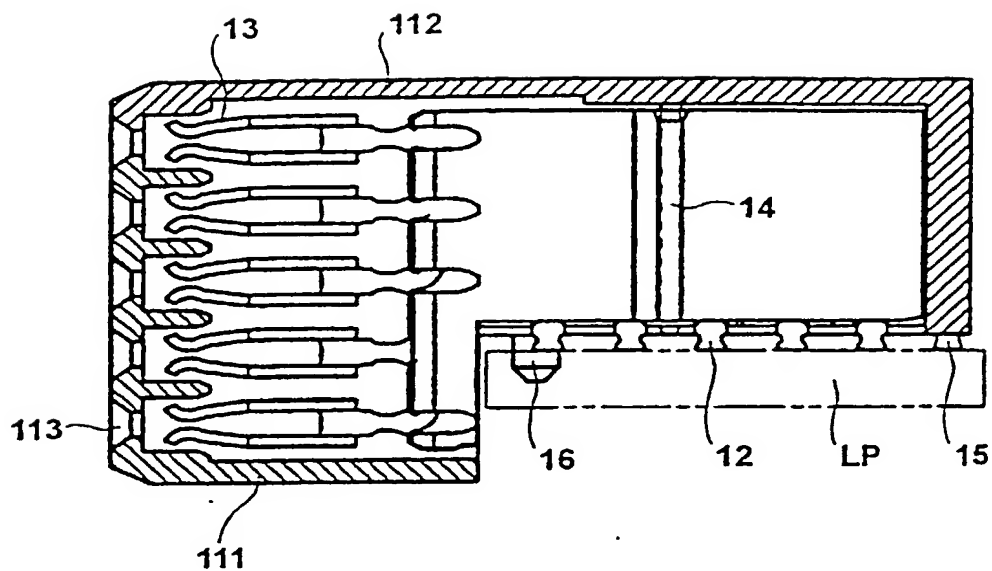


FIG 3

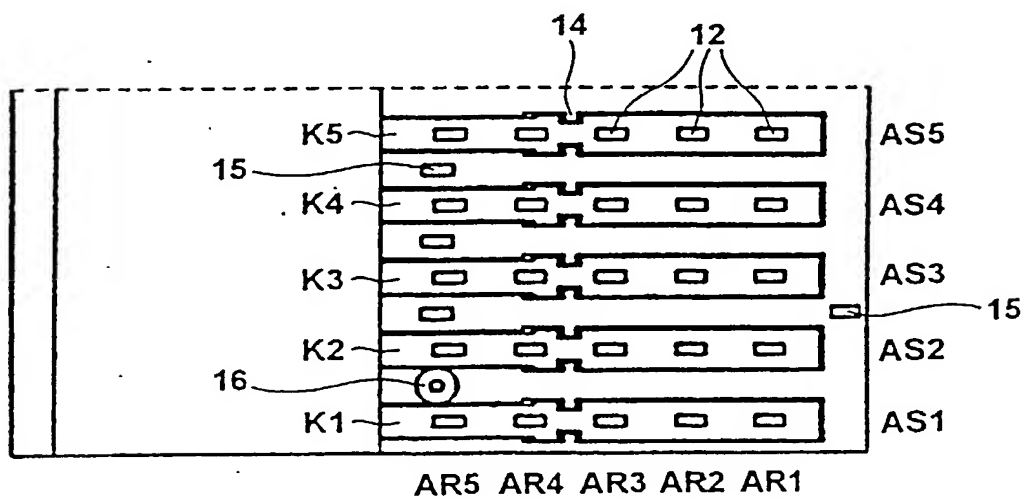


FIG 4

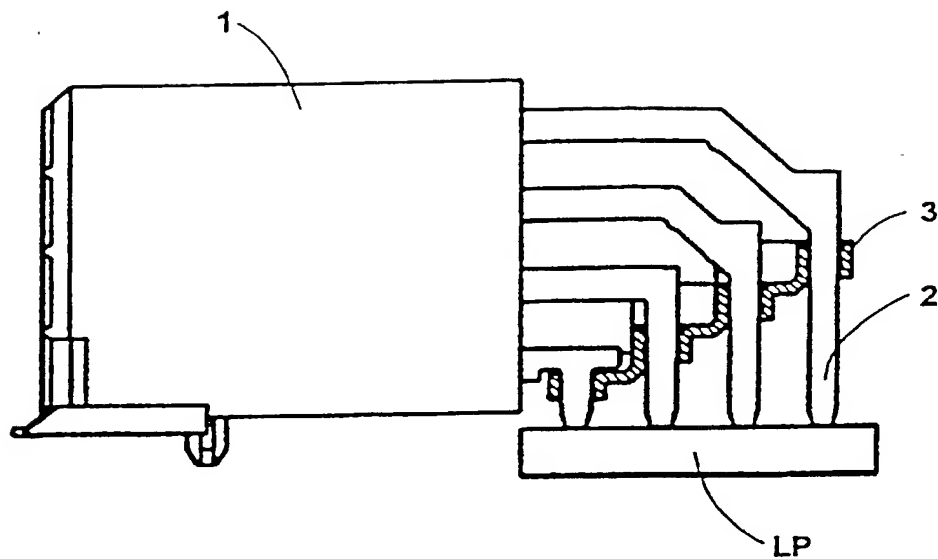


FIG 5

Docket No.
KSN0026

Declaration and Power of Attorney For Patent Application

English Language Declaration

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

COMPONENT FOR ASSEMBLY ON A PRINTED CIRCUIT BOARD

the specification of which

(check one)

☐ is attached hereto.

☒ was filed on February 19, 2002 as United States Application No. or PCT International Application Number 10/049,947 and was amended on February 19, 2002

(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d) or Section 365(b) of any foreign application(s) for patent or inventor's certificate, or Section 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)

Priority Not Claimed

<u>DE 19939584.5</u>	<u>Germany</u>	<u>20 August 1999</u>	<input type="checkbox"/>
(Number)	(Country)	(Day/Month/Year Filed)	
<u> </u>	<u> </u>	<u> </u>	<input type="checkbox"/>
(Number)	(Country)	(Day/Month/Year Filed)	
<u> </u>	<u> </u>	<u> </u>	<input type="checkbox"/>
(Number)	(Country)	(Day/Month/Year Filed)	

I hereby claim the benefit under 35 U.S.C. Section 119(e) of any United States provisional application(s) listed below:

(Application Serial No.)

(Filing Date)

(Application Serial No.)

(Filing Date)

(Application Serial No.)

(Filing Date)

I hereby claim the benefit under 35 U. S. C. Section 120 of any United States application(s), or Section 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. Section 112, I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, C. F. R., Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application:

PCT/IB00/01377

(Application Serial No.)

21 August 2000

(Filing Date)

Pending

(Status)

(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)

(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)

(patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

9
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Gerard T. Gallagher, 39,679
Daniel Tychonievich, 41,358
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100

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Sole or first inventor's signature <u>Johan Vanbesien</u>	Date <u>6/6/2002</u>
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Citizenship <u>Belgium</u>	
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Full name of second inventor, if any	
Second inventor's signature	Date
Residence	
Citizenship	
Post Office Address	

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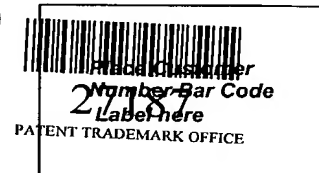
CHANGE OF CORRESPONDENCE ADDRESS Application

Address to:
Assistant Commissioner for Patents
Washington, D.C. 20231

Application Number	10/049,947
Filing Date	February 19, 2002/1A:8/21/00
First Named Inventor	Johan Vanbesien
Art Unit	
Examiner Name	
Attorney Docket Number	KSN0026

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I am the :

- ☐ Applicant/Inventor.
- ☐ Assignee of record of the entire interest.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).
- ☒ Attorney or Agent of record.
- ☐ Registered practitioner named in the application transmittal letter in an application without an executed oath or declaration. See 37 CFR 1.33(a)(1). Registration Number

Typed or Printed Name Eric J. Groen, Reg. No. 32,230

Signature

Date

July 19, 2002

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☒ *Total of 1 forms are submitted.

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